109 Glenwood Boulevard,
Schenectady, N. Y.,
Oct. 17, 1922.

My dear Courmerford:

Yours of the 7th was duly received, and it is a satisfaction thereby to know that you are pleased with my rough design for an Edison commemorative monument at Menlo Park — to be made mostly from the bricks of the old machine shop ruin. I have only to add here that it should be a monument that is a monument, say 25 or 30 feet tall above the granite base. Granite (cut) is expensive, but there need be only a granite outside, filled with concrete, which would be as durable as all granite, and look just the same. Any concrete exterior parts would look cheap.

As you know, the first Edison electric locomotive (now in the Edisonia Exhibition in New York City) is in a sadly dilapidated condition, with many parts missing. It can be made as good as new, however, from fine photographs of it, from different angles, taken in 1881 for use in a patent interference suit. I testified in that suit, and have a copy of the printed records, including the photographs. Wardlaw knows of this.

From these records, especially the testimony of Julius L. Hornig, who was the draughtsman and mechanical engineer on the job, I find the work on the railway began in March, 1880. The rails were obtained in April, and laying them began on April 11th. The laying was completed and electrical connection was made on May 11th.

The locomotive was first operated on May 13th, but operation ceased the first day, due to a friction driving pulley breaking. The motor armature was connected with the locomotive driving axle through pulleys having grooves and ridges on their faces, which engaged and drove by friction. I was present at the trial and breakdown.

Within a day or two, say, smooth pulleys and belting were substituted for the friction drive, and the locomotive was again operating on the track; and this continued until the fall of 1880. The locomotive in this condition was the one the public, in thousands, saw and rode behind, and is the one known as Edison's First Electric Locomotive — now at the Edisonia Exhibition, a relic of the big past.

In the fall of 1880, worm and spur gearing was substituted for the pulleys and belting, but later removed and the pulleys and belting were restored in original form.

Hornig could not remember the date this restoration was made. Neither can I, but I remember the fact — and vividly for sufficiently good reason personal to myself.

The circumstances (or some important ones) are these: After the friction gearing broke, May 13, 1880, and the smooth pulley and belting substitution was made to keep the railway going, it took until fall to design the worm and spur gearing, and get it made and on the ground, and installed to demonstrate, as Edison desired, that heavy traction at low speed for certain purposes was practicable.

As the time for installing approached, I did a little figuring on the design on my own account, and somehow — modestly ventured the opinion to Someone that about 75 percent of the energy transmitted to this mechanism would be stopped there by friction.

My opinion traveled mysteriously to Edison, with the result that, "one dark and stormy night", I was quietly invited to leave my laboratory sanctum and take a walk to Kruesi's office in the machine shop where "Edison wants to see you." There I found, awaiting me in belligerent attitude, Edison, Batchelor, Upton, Kruesi and Hornig. Then followed the questions and answer: "Have you said so?", "Yes." "Prove it", "I will." Whereupon I proved it — to my own satisfaction; but with no favorable

impression upon Edison — or the rest.

To put matters mildly, he gave me the very devil for my temerity; said that if I was right, the design would make a "damned good melting furnace" (which was his metaphorical way of saying that I was a damned fool in the matter, and so said that my feelings should not be overhurt), and uttered other hot stuff. Well, we all parted to cool off, "each of the same opinion still", and to await installation and test.

The day of reckoning came, but I was never paid the debt due me for the interview that night, except indirectly through the inward satisfaction at having been right, as an engineer — not through their professional defeat. The locomotive, with its new worm and spur gearing, was ready one day; the circuit was closed; the new arrangement began its work, grinding away like a big flour mill; the locomotive very slowly moved along the track for perhaps 200 feet, when flames shot out from the greasy waste in the journal boxes.

The test ended there; 75 percent, say, of the energy had stopped where I said it would, and as heat, had traveled to the journal boxes.

The pulley and belt arrangement was quickly replaced, and the locomotive has been in peace, mostly resting, ever since.

10/17/22
C.L.C.

5

The photographs, before mentioned, do not show a suggestion of a headlight. But both Edison and I testified that one was installed and used, and I can remember it today. We testified in 1881. I am sure that illustrations of Edison's railway in technical journals, and perhaps newspapers of that day, will show the headlight on the first locomotive.

Very truly yours,

Chas. L. Clarke.

T. C. Martin, Esq.,
Worthington,
Ringville P.O., Mass.